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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/788,891	02/27/2004	Paul S. Palumbo	99097CIPCON	4560

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Cabot Corporation
Law Department
157 Concord Road
Billerica, MA 01821

08/24/2007

EXAMINER

NILAND, PATRICK DENNIS

ART UNIT	PAPER NUMBER
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1714

MAIL DATE	DELIVERY MODE
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08/24/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/788,891

Applicant(s)

PALUMBO ET AL.

Examiner

Patrick D. Niland

Art Unit

1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 5-15, 17, 18, 21-25, 34, 35 and 40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 5-15, 17-18, 21-25, 34-35, and 40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date: _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Art Unit: 1714

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7/11/07 has been entered.

The amendment of 7/11/07 has been entered. Claims 1, 5-15, 17-18, 21-25, 34-35, and 40 are pending.

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3.

A. Claims 1, 5-15, 17-18, 21-25, 34-35, and 40 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-27 of U.S. Patent No. 6723783 Palumbo et al.. Although the conflicting claims are not identical, they are not patentably distinct from each other because the patented claims encompass the instantly

claimed electrophile/nucleophile reaction products and reactive groups within the patented claims but also require acylating reaction.

The instant claims recite "comprising" and therefore include the acylating reaction of the patented claims. The patented claims therefore fall within the scope of the instantly claimed subject matter though their scope is somewhat different than that of the pending claims.

B. Claims 1, 5-15, 17-18, and 40 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-32 of U.S. Patent No. 7173078 Lamprey et al.. Although the conflicting claims are not identical, they are not patentably distinct from each other because the patented claims encompass the instantly claimed electrophile/nucleophile reaction products and reactive groups within the patented claims and the only enabled means for attaching the claimed reactive groups to the claimed pigment is via the instantly claimed diazonium salt. The patented claims therefore fall within the scope of the instantly claimed subject matter though their scope is somewhat different than that of the pending claims.

C. Claims 1, 5-15, 17-18, 21-25, 34-35, and 40 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-38 of U.S. Patent No. 6833026 Palumbo. Although the conflicting claims are not identical in scope, they are not patentably distinct from each other because the patented claims encompass the instantly claimed electrophile/nucleophile reaction products and reactive groups within the patented claims.

The patented claims therefore fall within the scope of the instantly claimed subject matter though their scope is somewhat different than that of the pending claims.

Art Unit: 1714

4. Claims 1, 5-15, 17-18, 21-25, 34-35, and 40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A. It is unclear what is required of "aromatic compounds which undergo addition-elimination reactions" of the instant claims explicitly reciting this requirement or implicitly having this requirement by virtue of their use of aromatic compounds in the claimed reaction. Particularly, it is unclear if this language is requiring that the aromatic compound actually undergoes the recited addition-elimination reaction or that it merely be capable of undergoing an addition-elimination reaction.

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1 and 8-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Moffatt et al. '932 (U.S. 6,221,932) taken in view of the evidence in Organic Chemistry.

Moffatt et al. '932 disclose a method of making a modified pigment comprising reacting a pigment having attached aromatic ester group with polymer such as polyethylene glycol, polyamine, or polyethyleneimine. The reaction occurs by nucleophilic substitution (col.4, line 29-col.5, line 41, col.6, lines 50-60, and col.7, lines 53-58).

It is noted that Moffatt et al. '932 disclose that the aromatic ester group undergoes nucleophilic substitution and not addition-elimination reaction as presently claimed. However, this does not mean that the aromatic ester group does not or cannot undergo addition-elimination reaction. Evidence to support this position is found in Organic Chemistry (pages 1035 and 1048- 1049), which discloses that elimination-addition is a specific type of nucleophilic substitution or specific mechanism used in nucleophilic substitution.

Specifically, applicants argue that Moffatt et al. '932 is not a relevant reference against the present claims given that while Moffatt et al. '932 disclose reacting pigment having attached aromatic ester group with polymer, the aromatic groups of Moffatt et al. '932 are not the types that undergo addition-elimination as presently claimed. Applicants argue that an addition-elimination of a substituted aromatic group involves replacement of the substituent by reacting species wherein the reaction occurs on the aromatic ring while the aromatic ring of Moffatt et al. '932 undergoes nucleophilic substitution which reaction occurs at the ester carbonyl and wherein there is no replacement of the ester group.

However, while Moffatt et al. '932 do disclose that the aromatic ester undergoes nucleophilic substitution this does not mean that the aromatic ester group does not or cannot

Art Unit: 1714

undergo addition-elimination reaction. Evidence to support this position is found on page 1035 of *Organic Chemistry* which discloses that elimination-addition is a specific type of nucleophilic substitution or specific mechanism used in nucleophilic substitution. Thus, it is clear that the broad disclosure in Moffett et al. '932 of nucleophilic substitution includes addition-elimination reactions as presently claimed. Further, it is noted that the aromatic group, i.e. first chemical group, of Moffatt et al. '932 is of the formula $R-(CO)-O\text{-phenylene-Y}$ where Y includes fluorine. When this first chemical group is attacked with nucleophile such as amine-terminated polymer as disclosed by Moffatt et al. '932, then it would appear that the electrophilic fluorine in the aromatic ring will be eliminated and its position in the aromatic ring will be occupied by the nucleophile.

It is not clear that the instant claims require that the elimination addition reaction take place. It may be that the nebulous language is merely requiring that the aromatic compound have the ability to undergo the addition elimination reaction. The aromatic compounds of the reference clearly have this ability. In addition, organic reactions are notorious for giving many different reaction products due to the many different possible reactions there are under a give set of circumstances. Surely, we can all recall explaining the 66% of theoretical yield we got in our experiments in organic chemistry labs. Thus, given the tendency of organic reactions to give side reactions, and the ability of the aromatic compounds of Moffatt to undergo elimination addition reaction with the disclosed amines and alcohols, it is not seen that such a side product does not necessarily result in the reaction of the reference. The applicant's arguments in this regard are noted but are not supported with probative evidence that the elimination addition

Art Unit: 1714

reaction does not necessarily and inherently occur.

In light of the above, it is clear that Moffatt et al. '932 anticipate the present claims.

8. Claims 1, 5, 8-9, 12, 14-15, 17-18, and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 99/31175.

WO 99/31175 discloses a method of making a modified pigment comprising reacting carbon black pigment which has attached organic group which has attached ionic group with at least one polymer which attached to the ionic group. It is disclosed that the polymer includes polyamide or polyacrylate and the organic group includes amide group, aromatic group, aliphatic group derived from ketone or aldehyde, and alkyl sulfate (page 2, lines 9-13 and 21-22 which does not limit the bonding to ionic bonds as argued by the applicant; page 4, lines 20-22 which discloses attachment via diazonium salt, page 5, lines 13-27, page 6, lines 4-28 which encompasses aromatic compounds which can undergo addition elimination reactions; page 8, lines 22-23; page 11, lines 3-15 and 21-27; page 12, line 2 through page 13, line 2, page 13, lines 7-10, and page 16, lines 8-13).

However, it is the examiner's position that the third type of modified carbon black disclosed by WO 99/31175, i.e. carbon black having attached organic group to which is attached ionic or ionizable group to which is attached counterionic group (page 16, lines 8-26), does disclose the presently claimed modified pigment. The organic group which is attached to the pigment is aliphatic group such as those derived from aldehydes, ketones, carboxylic acids, etc. (page 11, lines 3-13) or an aromatic group (page 5, line 21) having attached functional group such as amine, carboxylates, cyano group, halogen, etc. (page 6, lines 4-25 and page 11, lines 16-27) to which is attached ionic or ionizable group such as amine group (col. 12, line 14-col. 13,

Art Unit: 1714

line 11), to which is attached counterionic group with at least one organic group as previously described or polymer group that includes polyamide (page 5, lines 16-19). Thus, it appears that WO 99/31175 does disclose electrophiles and nucleophiles as presently claimed. While applicants argue that the groups are attached using counterion exchange, it is noted that there is no requirement in the present claims regarding the mechanism by which the groups attached to the pigment react with each other. The present claims only require that the first group react with second group to form modified pigment which is then reacted with additional group, i.e. polymer. Given that WO 99/31175 discloses reacting first group, i.e. organic group, with second group, i.e. ionic or ionizable group, and then with counterionic group, it is the examiner's position that WO 99/31175 meets the requirements of the present claims.

Furthermore, the polymers disclosed by 99/31175 have moieties of the instantly claimed list of third chemical groups. Regarding the product claims, one cannot tell how these moieties falling within the scope of the instantly claimed third chemical groups were made. Thus, those groups present in the polymers of WO 99/31175, which fall within the scope of the instantly claimed third chemical group and which are covalently attached to the pigments via diazonium salts, fall within the scope of the instantly claimed product claims regardless of how these groups were made. See MPEP 2113.

In light of the above, it is clear that WO 99/31175 anticipates the present claims.

9. Claims 21-22, 24, 34-35, and 40 are rejected under 35 U.S.C. 102(e) as being anticipated by Moffatt et al. '257 (U.S. 6,323,257).

Moffatt et al. '257 disclose modified pigment and ink jet ink comprising modified pigment wherein the modified pigment has attached at least one directly attached organic group which is

Art Unit: 1714

the reaction product of (2-sulfatoethyl)-sulfone group and at least one nucleophilic polymer such as those obtained from ester of acrylic acid, i.e. polyacrylate, and containing polyalkylene glycol (col.4, lines 12-23 and 42-42, col.6, lines 6-12 and 30, col.12, line 20, col. 13, lines 15-25, col. 16, lines 25-30, and table bridging cols. 5-6/7-8). In light of the above, it is clear that Moffatt et al. '257 anticipates the present claims.

Applicants argue that Moffatt et al. '257 is not a relevant reference against the present claims given that Moffatt et al. '257 clearly teaches modified pigment which is reaction product of polymerization reaction with attached reactive group, i.e. 2-(sulfatoethyl)-sulfone, which is in direct contrast to the present claims that require modified pigment comprising pigment having attached at least one organic group which is the reaction product of at least one (2-sulfatoethyl) sulfone group and at least one nucleophilic polymer.

It is agreed that the modified pigment of Moffatt et al. '257 is prepared by reacting polymer having first chemical group, i.e. (2-sulfatoethyl) sulfone, with monomer which is then polymerized resulting in covalently attached polymer. However, it is noted that the end result of Moffatt et al. '257 is the same as presently claimed, i.e. the attachment of nucleophilic polymer to the reactive group that is attached to the pigment. This can be seen in Figure 1 of Moffatt et al. '257 that shows that the polymeric group is attached to the pigment.

It is noted that "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable

Art Unit: 1714

even though the prior product was made by a different process", *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Further, "although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product", *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983). See MPEP 2113.

Therefore, absent evidence of criticality regarding the presently claimed process and given that Moffatt et al. '257 disclose product as presently claimed, i.e. pigment having nucleophilic polymer attached to (2-sulfatoethyl)-sulfone group that is attached to pigment, it is the examiner's position that Moffatt et al. '257 meets the requirements of the present claims.

Applicants also argue that the polymer pointed to by the examiner, i.e. obtained from ester of acrylic acid and containing polyalkylene glycol, is not a nucleophilic polymer.

However, it is noted that col.6, line 30 of Moffatt et al. '257, pointed to by the examiner in paragraph 7 of the office action mailed 5/9/06 discloses the use of monomers including alkylene glycols and their ethers derived from acrylic and methacrylic acid which clearly encompasses polymer obtained from alkylene glycol. As set forth on page 9, line 27 of the present specification, polyalkylene glycol is a nucleophilic polymer within the scope of the present claims. Further, the examiner also pointed to Table bridging cols. 5-6/7-8 which includes monomers utilized to obtain nucleophilic polymer. Specific examples of such monomers are found in cols. 11-12 and include monomers such as dimethylaminoethyl acrylate.

It is also noted that the "vinyl acetate and alcohols" of column 6, line 32 means vinyl alcohol as vinyl alcohol is well known to be produced by hydrolysis of vinyl acetate polymer and is

Art Unit: 1714

encompassed by the instant claim 24. The moiety of column 5, lines 15-20 is the intermediate apparently intended to be formed by the applicant from the instantly claimed compound of claim 23 as seen at page 12 of the instant specification. This compound in conjunction with the above cited monomers of the patentee will necessarily form the same linkage as obtained by the applicant. No probative evidence to the contrary is seen.

For the above reasons, this rejection is maintained.

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1,148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C.

103(a) are summarized as follows:

1. Determining the scope and contents of the prior art. 2. Ascertaining the differences between the prior art and the claims at issue. 3. Resolving the level of ordinary skill in the pertinent art. 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Art Unit: 1714

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moffatt et al. '257 (U.S. 6,323,257) in view of Moffatt et al. (U.S. 6,221,932). The disclosure with respect to Moffatt et al. in paragraph 9 above is incorporated here by reference. The difference between Moffatt et al. '257 and the present claimed invention is the requirement in the claims of specific type of polymer. Moffatt et al. '932, which is drawn to ink composition comprising modified pigment, disclose attaching polymer such as polyethyleneimine to pigment in order to produce an ink with increased smearfastness, enhanced print quality, and improved bleed control. Moffatt et al. '932 further disclose the equivalence and interchangeability of polyalkylene glycols, as disclosed by Moffatt et al. '257, with polyethyleneimine (col. 1, lines 15-23, col.5, lines 43-44, 53, and 63-65, and col.6, lines 45-55). In light of the motivation for using specific type of polymer disclosed by Moffatt et al. '932 as described above, it therefore would have been obvious to one of ordinary skill in the art to use such polymer in the pigment of Moffatt et al. '257 in order to produce an ink with increased smearfastness, enhanced print quality, and improved bleed control, and thereby arrive at the claimed invention. Again, where the moieties disclosed by Moffatt are

Art Unit: 1714

those of the instant claims, they are expected to necessarily and inherently produce compounds falling within the scope of the instant claims. There is no probative evidence that the argued reactions do not necessarily occur during the processing and reacting of the reference.

12. Claims 1, 5-9, 12, and 21-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moffatt et al. '257 (U.S. 6,323,257) in view of US Pat. No. 3900510 Fuchs et al..

Moffatt et al. '257 disclose a method of producing a modified pigment comprising reacting first chemical group such as (2-sulfonatoethyl)-sulfone group with second chemical group, i.e. nucleophilic polymer such as polyalkylene glycol, in order to form third chemical group, (col.4, lines 12-23 and 42-50, col.6, lines 6-12 and 30-34, and col.16, lines 25-30).

The difference between Moffatt et al. '257 and the present claimed invention is the requirement in the claims that the first chemical group is attached to the pigment using diazonium salt of the specific type of (2-sulfatoethyl) sulfone group. Moffatt et al. '257 does not teach the use of the instantly claimed sulfatoethylsulfone group to attach to the pigment but does disclose using diazonium moieties to do so at column 3, lines 43-49 to attach the first chemical group is attached to the pigment. Fuchs shows that reacting alkaline agent and the sulfuric acid ester of aminobenzylsulfone ethylenesulfonate will give the vinyl aminobenzylsulfone.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art at the time of the instantly claimed invention to use diazonium salt to attach the first chemical group to the pigment of Moffatt et al. '257 using the compound of the instant claims 5-7 and 23 and to treat this compound with the alkaline compound to arrive at the compound of column 5, lines 15-20 of Moffatt, and thereby arrive at the claimed invention. Again, where the moieties

Art Unit: 1714

disclosed by Moffatt are those of the instant claims, they are expected to necessarily and inherently produce compounds falling within the scope of the instant claims. There is no probative evidence that the argued reactions do not necessarily occur during the processing and reacting of the reference.

13. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moffatt et al. '257 in view of WO 99/31157 as applied to claims 1, 5-9, and 12 above, and further in view of Moffatt et al. (U.S. 6,221,932).

The difference between Moffatt et al. '257 and the present claimed invention is the requirement in the claims of specific type of polymer.

Moffatt et al. '932, which is drawn to ink composition comprising modified pigment, disclose attaching polymer such as polyethyleneimine to pigment in order to produce an ink with increased smearfastness, enhanced print quality, and improved bleed control. Moffatt et al. '932 further disclose the equivalence and interchangeability of polyalkylene glycols, as disclosed by Moffatt et al. '257, with polyethyleneimine (col. 1, lines 15-23; col.5, lines 43-44, 53, and 63-65, and col.6; lines 45-55).

In light of the motivation for using specific type of polymer disclosed by Moffatt et al. '932 as described above, it therefore would have been obvious to one of ordinary skill in the art at the time of the instantly claimed invention to use such polymer in the pigment of Moffatt et al. '257 in order to produce an ink with increased smearfastness, enhanced print quality, and improved bleed control, and thereby arrive at the claimed invention. Again, where the moieties disclosed by Moffatt are those of the instant claims, they are expected to necessarily and

Art Unit: 1714

inherently produce compounds falling within the scope of the instant claims. There is no probative evidence that the argued reactions do not necessarily occur during the processing and reacting of the reference.

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Devonport (U.S. 6,372,820) discloses pigment having attached polymer, however, there is no disclosure of first chemical group, second chemical group, and third chemical group as presently claimed or any disclosure that the pigment has attached organic group that is reaction product of (2-sulfatoethyl)-sulfone group and nucleophilic polymer as required in present claims 21 and 34. Johnson et al. (U.S. 6,336,965) disclose modified pigment having attached polymer.

Tsang et al. (U.S. 6,150,433) disclose modified pigment produced by attaching polymerizable olefinic groups on the pigment followed by reaction with polymer.

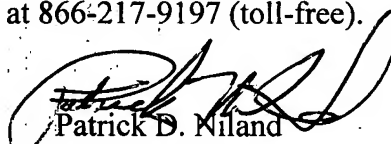
Ikeda et al. (U.S. 5,952,429) disclose method for making a modified pigment comprising reacting a pigment which comprises a functional group with polymer which comprises reactive group using electrophilic or nucleophilic addition to form pigment having polymer attached through covalent bond such as amide bond. However, there is no disclosure that the carbon black functional group is organic group as required in present claims or (2-sulfatoethyl)-sulfone group as required in present claims 21 and 34.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick D. Niland whose telephone number is 571-272-1121. The examiner can normally be reached on Monday to Thursday from 10 to 5.

Art Unit: 1714

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan, can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Patrick D. Niland
Primary Examiner
Art Unit 1714